Revue suisse de Zoologie 120 (4): 563-573; décembre 2013

Taxonomic notes on the genus *Nomuraius* Hlaváč (Staphylinidae: Pselaphinae)

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Taxonomic notes on the genus *Nomuraius* Hlaváč (Staphylinidae: Pselaphinae). - The pselaphine genus *Nomuraius* is characterized and revised with three species being treated: the type species *N. vietnamicus* Hlaváč (north Vietnam), *N. piaoacus* n. spec. (north Vietnam), and *N. sinicus* n. spec. (South China). All species are diagnosed, described, and illustrated. A key for the identification of the species is provided.

Keywords: Coleoptera - taxonomy - new species - Vietnam - China.

INTRODUCTION

The tyrine genus *Nomuraius* Hlaváč is one of the smallest of the *Pselaphodes* complex of genera. It currently contains a single species *N. vietnamicus* Hlaváč from north Vietnam (Hlaváč, 2003; Hlaváč & Chandler, 2005).

According to the original description (Hlaváč, 2003) and the revised key to the genera of the *Pselaphodes* complex (Yin & Hlaváč, 2013), *Nomuraius* is characterized by the following features: 1) head with small, nude vertexal foveae; lacking a frontal fovea; 2) pronotum lacking an antebasal sulcus connecting nude median and lateral antebasal foveae; 3) maxillary palpomeres III-IV each asymmetric, slightly expanded to strongly projecting laterally; and 4) Tarsomeres II greatly lobed, extending beyond midlength of tarsomeres III.

An examination of the types of *N. vietnamicus* housed in the National Science Museum, Tokyo, as well as additional specimens collected from north Vietnam and South China facilitated this study, and resulted in the discovery of two new species. In the present paper, a diagnosis, a description, and illustrations of major diagnostic features are provided for all treated species, An identification key is also presented.

MATERIAL AND METHODS

The material treated in this study is housed in the following public institutions and private collections:

SNUC Insect Collection of Shanghai Normal University, Shanghai, China (Z.-W. Yin)
NSMT National Museum of Nature and Science, Tokyo, Japan (S. Nomura)
pcPH private collection of Peter Hlaváč, Praha, Czech Republic

Manuscript accepted 19.09.2013

The collection data of the referred material are quoted verbatim. A slash (/) is used to separate lines on the same label, and a double slash (//) is used to separate different labels. Authors' notes are included in '[]'. Depository is indicated after the collection data of respective species.

The terminological terms applied here follow Chandler (2001), except we use 'ventrite' instead of 'sternite' when discussing the meso- and metathoracic structures.

The following acronyms are used in the text: AL-length of the abdomen along the midline; AW-maximum width of the abdomen; BL-length of the body (= HL + PL + EL + AL); EL-length of the elytra along the sutural line; EW-maximum width of the elytra; HL-length of the head from the anterior clypeal margin to the occipital constriction; HW-width of the head across eyes; PL-length of the pronotum along the midline; PW-maximum width of the pronotum.

TAXONOMY

Nomuraius Hlaváč, 2003

Nomuraius Hlaváč, 2003: 290; type species: *Nomuraius vietnamicus* Hlaváč, 2002 by monotypy.

DIAGNOSIS: Head with distinct frontal rostrum; with small, nude vertexal foveae; lacking frontal fovea; lacking ocular-mandibular carinae; maxillary palpi asymmetric, palpomeres I short, II distinctly pedunculate at bases, roundly expanded to shortly projecting laterally, palpomeres III-IV shortly pedunculate at bases, distinctly projecting laterally. Pronotum with nude median- and lateral antebasal foveae weakly to distinctly marked, lacking antebasal sulcus. Abdomen with tergite IV longest.

REDESCRIPTION: Length 2.70-3.11 mm. Head with short, narrow frontal rostrum, rostrum slightly prominent, antennal tubercles weak; nude vertexal foveae small and nude, lacking frontal fovea, lateral postantennal pits small; with 11 antennomeres, clubs formed by apical three antennomeres; maxillary palpi asymmetric, palpomere II widest near apices, roundly expanded to slightly projecting laterally, III-IV widest near middle, distinctly projecting laterally. Gular flat, shallow foveae separated.

Pronotum with small punctiform to large round median- and lateral antebasal foveae, median longitudinal sulcus present, lacking antebasal sulcus; lateral procoxal foveae deep. Each elytron with two basal foveae; with one subbasal fovea; discal striae extending from outer basal foveae posteriorly beyond elytral midpoint. Thorax with two median mesoventral foveae widely separated; large lateral mesoventral foveae forked, anterior branch larger than posterior branch; lateral mesocoxal foveae present; lacking median and lateral metaventral foveae; posterior margin of metaventrite deeply notched medially.

Legs with tasomeres I short, II greatly lobed, extending beyond midpoint of tasomeres III.

Abdomen with tergite IV longest, more than twice length of next tergite, VI shortest, V and VII subequal in length; tergite IV with mediobasal foveae moved laterally to form large round pockets at end of basal sulcus, with two small basolateral foveae; tergites V-VII each with one pair of small basolateral foveae. Sternite IV longest, as long as V-VII combined along midlength, lacking mediobasal foveae, with large pockets formed by basolateral foveae; V-VII with basolateral foveae weakly indicated.

Males with posterior half of head, apical portions of pronotum, protibiae and metatibiae variously modified. Aedeagus with asymmetric median lobe; elongate parameres symmetric; diaphragm opening nearly oval.

DISTRIBUTION: Three species are known from South China (*N. sinicus*), and north Vietnam (*N. piaoacus*, *N. vietnamicus*).

COMPARATIVE NOTES: Among the members of the *Pselaphodes* complex of genera, *Nomuraius* shares only with *Taiwanophodes* Hlaváč the greatly lobed tarsomeres II. The two genera can be readily separated by the vertexal foveae being nude, the absence of a frontal fovea, and the pronotum lacking an antebasal sulcus connecting the nude median- and lateral antebasal foveae in *Nomuraius*, while *Taiwanophodes* has setose vertexal and frontal foveae, and the pronotal median- and lateral antebasal foveae are setose and are connected by an antebasal sulcus.

Key to males of *Nomuraius*

1a Head with broad, deep cavity at posterior half (Fig. 1A); antennomeres X much shorter than XI (Fig. 2A); pronotum strongly modified at anterior portion (Fig. 2B); metatibiae simple, not expanded medially (Fig. 2H). (north Vietnam: Cao Bang) . . . . . *Nomuraius piaoacus* Yin & Li, new spec.

1b Head concaved only at posterior margin (Figs 1B, 4A); antennomeres X slightly shorter than XI (Figs 3A, 5A); pronotum only slightly modified at anterior portion (Figs 3B, 5B); metatibiae expanded medially near apices (Figs 3H, 5H) 2

2a Pronotum and elytra relatively more elongate (Fig. 1B); metatibiae less expanded medially near apices (Fig. 3H); tergite VIII about as long as wide (Fig. 3I); apical portion of aedeagal median lobe bent leftward dorsoventrally (Fig. 3L, N). (South China: Guangxi) . . . . . *Nomuraius sinicus* Yin & Li, new spec.

2b Pronotum and elytra relatively shorter (Fig. 4A); metatibiae more expanded medially near apices (Fig. 5H); tergite VIII much wider than long (Fig. 5I); apical portion of aedeagal median lobe bent rightward dorsoventrally (Fig. 5L, N). (north Vietnam: Vinh Phu) . . . . . *Nomuraius vietnamicus* Hlaváč

Nomuraius piaoacus Yin & Li, **new spec.** Figs 1A, 2, 6

HOLOTYPE: ♂, labelled 'Mt. Pia Oac (1,250 m) / Cao Bang Prov. / [N-VIETNAM] / 19.v.2000 / S. Nomura leg. // HOLOTYPE [red] / *Nomuraius piaoacus* / sp. n., Yin & Li / det. 2013, pcPH'.

DIAGNOSIS: Length 2.82 mm. Male: maxillary palpomeres II shortly projecting laterally; posterior half of head and anterior portion of pronotum strongly modified with large cavity and setose tufts, respectively; protibiae with distinct thin apical spur; metatibiae simple, not expanded medially near apices.

DESCRIPTION

Male (Fig. 1A): Length 2.82 mm. Head slightly wider than long, HL 0.52 mm, HW 0.56 mm, posterior half with large, deep cavity; eyes each composed of about

FIG. 1
Male habitus of *Nomuraius* Hlaváč. (A) *N. piaoacus* sp. n. (B) *N. sinicus* sp. n. Scales: 1 mm.

35 facets. Antennal clubs as in Fig. 2A. Pronotum (Fig. 2B) about as long as wide, PL 0.61 mm, PW 0.59 mm, apical portion modified with distinct median projection covered with dense setose tufts apically; distinct median- and lateral antebasal foveae round. Elytra wider than long, EL 0.84 mm, EW 1.02 mm. Long metaventral processes with apices curved anteriorly at apices (Fig. 2C). Trochanters and femora (Figs 2D, F, G) simple; protibiae (Fig. 2E) with thin apical spur; metatibiae simple near apices (Fig. 2H). Abdomen broad at base and narrowed apically, AL 0.85 mm, AW 1.00 mm. Tergite VIII (Fig. 2I) and sternite VIII (Fig. 2J) transverse, sternite IX as in Fig. 2K. Aedeagus length 0.56 mm, with symmetric median lobe apically bent rightwards (Figs 2L-N).

Female: Unknown.

DISTRIBUTION AND NATURAL HISTORY: The new species is currently known only from the type locality (Fig. 6). The single specimen was probably sifted from leaf litter from forest floor like the other congeners.

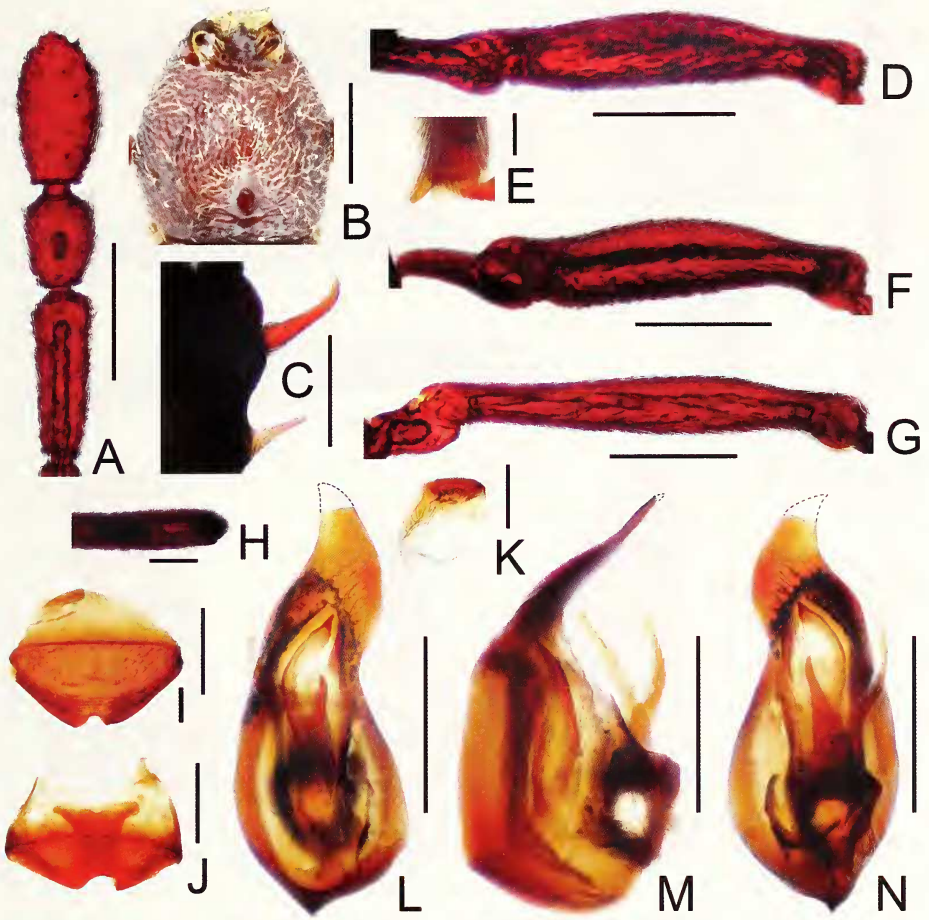

FIG. 2
Male diagnostic features of *Nomuraius piaoacus* sp. n. (A) Antenna. (B) Pronotum. (C) Metaventral process, in lateral view. (D) Protrochanter and profemur. (E) Apical portion of protibia. (F) Mesotrochanter and mesofemur. (G) metatrochanter and metafemur. (H) Apical portion of metatibia. (I) Tergite VIII. (J) Sternite VIII. (K) Sternite IX. (L) Aedeagus, in dorsal view. (M) Same, in lateral view. (N) Same, in ventral view. Scales [mm]: A, B, D, F, G = 0.3; C, I, J, L, M, N = 0.2; H, K = 0.1, E = 0.05.

COMPARATIVE NOTES: *Nomuraius piaoacus* can be easily separated from the other congeners by the strongly modified head and pronotum, and the simple metatibiae in the male. Both *N. sinicus* new spec. (described below) and *N. vietnamicus* have slightly modified head and pronotum, and have the metatibiae with apical portion more or less expanded medially near the apices.

ETYMOLOGY: The specific epithet is derived from the type locality, Pia Oac Mountain.

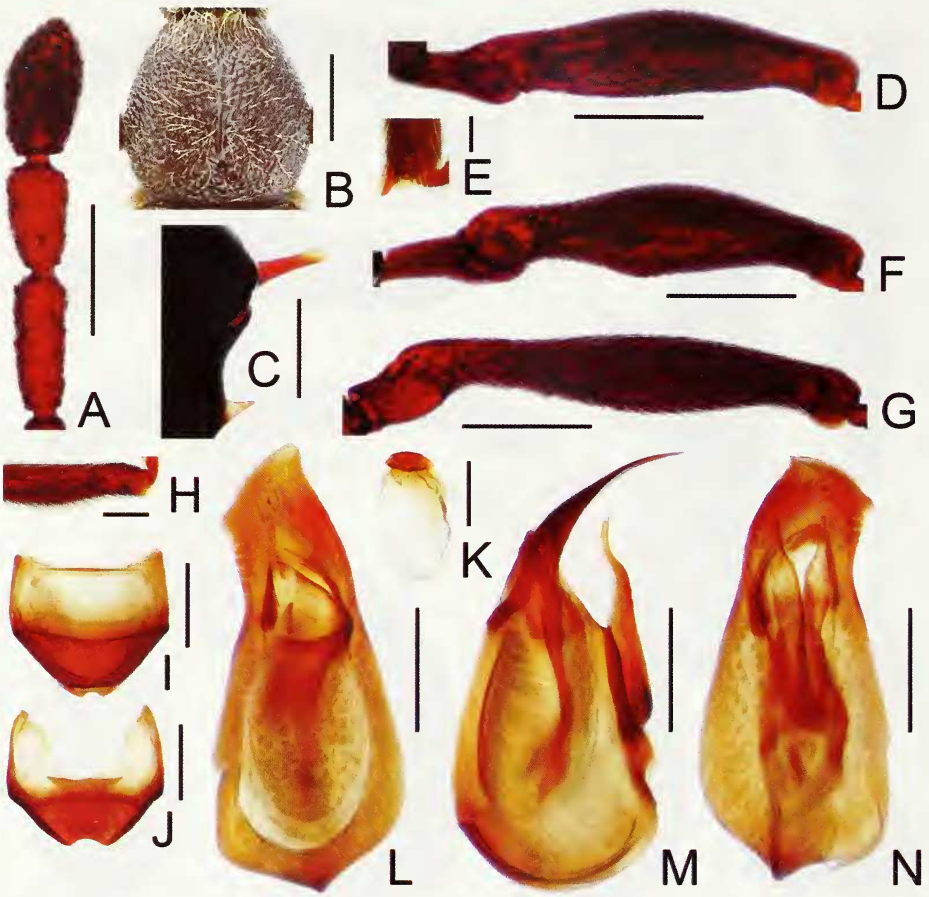

FIG. 3

Male diagnostic features of *Nomuraius sinicus* sp. n. (A) Antenna. (B) Pronotum. (C) Metaventral process, in lateral view. (D) Protrochanter and profemur. (E) Apical portion of protibia. (F) Mesotrochanter and mesofemur. (G) metatrochanter and metafemur. (H) Apical portion of metatibia. (I) Tergite VIII. (J) Sternite VIII. (K) Sternite IX. (L) Aedeagus, in dorsal view. (M) Same, in lateral view. (N) Same, in ventral view. Scales [mm]: A, B, D, F, G = 0.3; C, I, J, L, M, N = 0.2; H, K = 0.1, E = 0.05.

Nomuraius sinicus Yin & Li **new spec.** Figs 1B, 3, 6

HOLOTYPE: ♂, labelled 'CHINA: Guangxi, Shangsi County / Shiwandashan Forest Park, / 21°54′11″N, 107°54′14 E / ca. 325 m, mixed leaf litter, sifted / 25.iv.2011, Peng & Zhu leg. // HOLOTYPE [red] / *Nomuraius sinicus* / sp. n., Yin & Li / det. 2013, SNUC'.

PARATYPE: 1 ♀, same label data as holotype, except 'PARATYPE [yellow] / *Nomuraius sinicus* / sp. n., Yin & Li / det. 2013, SNUC'.

DIAGNOSIS: Length 2.89-3.01 mm. Male: maxillary palpomeres II shortly projecting laterally; head slightly concaved along posterior margin; pronotum with apical portion covered with tufts of setae; protibiae with short apical spur; metatibiae slightly roundly expanded medially near apices.

DESCRIPTION

Male (Fig. 1B). Length 3.01 mm. Head longer than wide, HL 0.65 mm, HW 0.56 mm, posterior margin slightly concaved; eyes each composed of about 30 facets. Antennal clubs as in Fig. 3A. Pronotum (Fig. 3B) slightly longer than wide, PL 0.66 mm, PW 0.62 mm, apical portion covered with sparse setose tufts; punctiform median- and lateral antebasal foveae small. Elytra wider than long, EL 0.85 mm, EW 1.08 mm. Long metaventral processes with bluntly rounded apices (Fig. 3C). Trochanters and femora (Figs 3D, F, G) simple; protibiae (Fig. 3E) with short apical spur; metatibiae slightly roundly expanded medially near apices (Fig. 3H). Abdomen broad at base and narrowed apically, AL 0.85 mm, AW 1.00 mm. Tergite VIII (Fig. 3I) about as long as wide; sternite VIII (Fig. 3J) slightly transverse, sternite IX as in Fig. 3K. Aedeagus length 0.51 mm, with symmetric median lobe apically bent leftwards (Figs 3L-N).

Female: Measurements: BL 2.89 mm, HL 0.65 mm, HW 0.55 mm, PL 0.60 mm, PW 0.59 mm, EL 0.77 mm, EW 1.06 mm, AL 0.87 mm, AW 1.09 mm. Eyes each compose of about 20 facets. Head, pronotum, protibiae and metatibiae simple; maxillary palpomeres II similar to those in male.

DISTRIBUTION AND NATURAL HISTORY: This species is known only from the type locality. The adults were sifted from mixed leaf litter in a broad-leaved forest.

COMPARATIVE NOTES: The new species is most closely allied to *N. vietnamicus* in sharing a similar habitus and male features. Externally, the two species can be separated from several subtle differences. *Nomuraius sinicus* has relatively slightly longer pronotum and elytra, has basal half of the mesofemora covered with long setae at ventral margins, and the metatibiae are relatively less expanded medially near the apices. In contrary, *N. vietnamicus* has relatively shorter pronotum and elytra, has the mesofemora covered with normal setae basoventrally, and the metatibiae are more distinctly expanded medially near the apices. The differences on the genital segments of the two species are more distinct, viz. *N. sinicus* has the tergite VIII nearly as long as wide, and has the aedeagal median lobe bent leftwards at the apex, while *N. vietnamicus* has distinctly transverse tergite VIII, and has the apical portion of the aedeagal median lobe being slenderer and bent rightwards.

ETYMOLOGY: The specific name refers to the county where the species was found.

Nomuraius vietnamicus Hlaváč, 2003 Figs 4-6

Nomuraius vietnamicus Hlaváč, 2003: 290; type locality north Vietnam, Vinh Phu Province, Tam Dao Mountains.

HOLOTYPE: ♂, labelled 'Mt., Tam Dao / (- Tam Dao Hai) / Vinh Phu Prov. // [N-VIETNAM] / 25.ix.1995 / S. Nomura leg. // HOLOTYPE [red] / *NOMURAIUS* / *vietnamicus* sp. nov. / P. Hlaváč det., 2000' (NSMT).

PARATYPE: 1 ♂, same label data as holotype (NSMT).

OTHER MATERIAL EXAMINED (6 ♂♂, 5 ♀♀): 1 ♀, labeled 'Mt., Tam Dao (950 m) / Vinh Phu Prov. / [N-VIETNAM] / 17.vi.1997, S. Nomura leg.' (SNUC); 1 ♂, same label data, except '14.vii.1997' (SNUC). – 1 ♂, same label data, except '21.v.2003' (pcPH). – 1 ♂, 1 ♀, same label data, except '23.v.2003' (SNUC). – 1 ♂, 1 ♀, labeled 'VIETNAM, Tam Dao, / N21°29′27″ E 105°37′49″ / 13.v.2012. 1128 m. / sift 03. V. Grebennikov (pcPH)'. – 1 ♀, same label data, except 'N21°27′54″ E 105°38′56″ / 14.v.2012. 1237 m / sift 04.' (pcPH). – 2 ♂♂, 1 ♀, same label data, except 'N21°27′42″ E 105°38′48″ / 15.v.2012, 1240 m / sift 05.' (pcPH, SNUC).

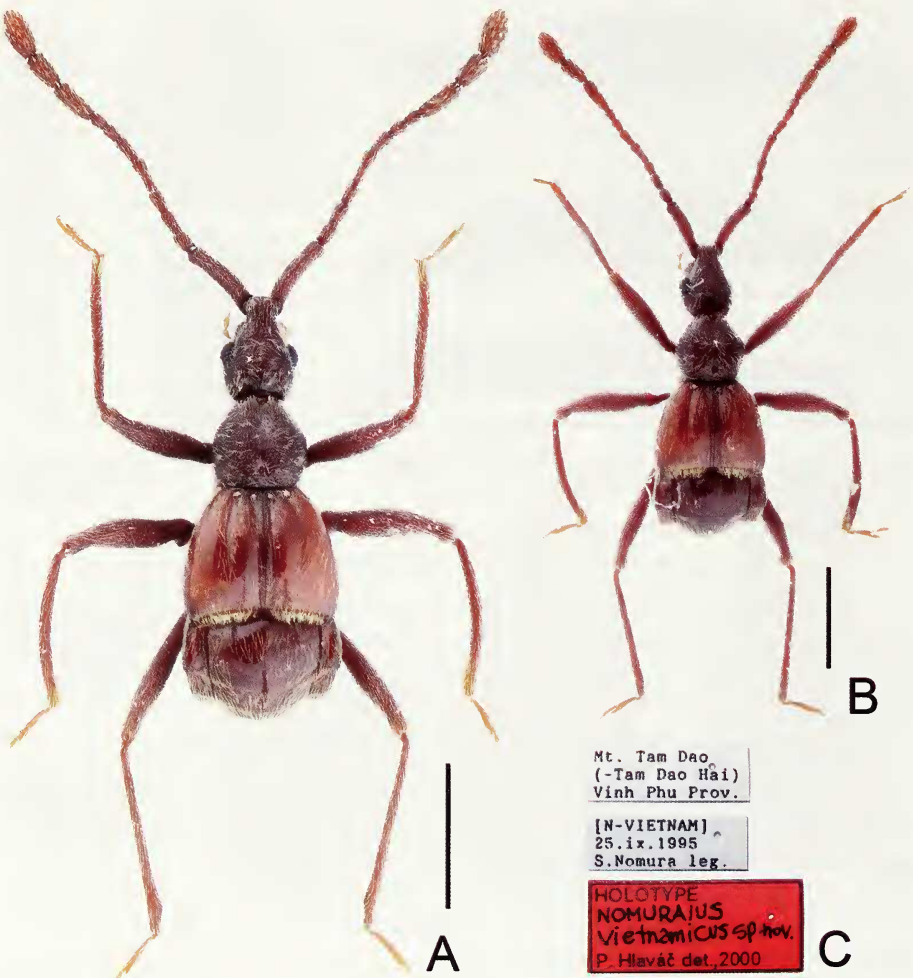

FIG. 4

Nomuraius vietnamicus Hlaváč, 2003. (A) Male habitus (non-type). (B) Holotype habitus. (C) Type label. Scale: 1 mm.

DIAGNOSIS: Length 2.70-3.11 mm. Male: maxillary palpomeres II roundly expanded laterally; head moderately concaved along posterior margin; pronotum with apical portion covered with tufts of setae; protibiae with short apical spur; metatibiae angularly expanded medially near apices.

SUPPLEMENTARY DESCRIPTION

Male (Fig. 4A, B): Length 2.99-3.10 mm. Head longer than wide, HL 0.71-0.73 mm, HW 0.56-0.57 mm, posterior margin moderately concaved; eyes each composed of about 25 facets. Antennal clubs as in Fig. 5A. Pronotum (Fig. 5B) about as long as wide, PL 0.66-0.68 mm, PW 0.65-0.66 mm, apical portion covered with sparse setose

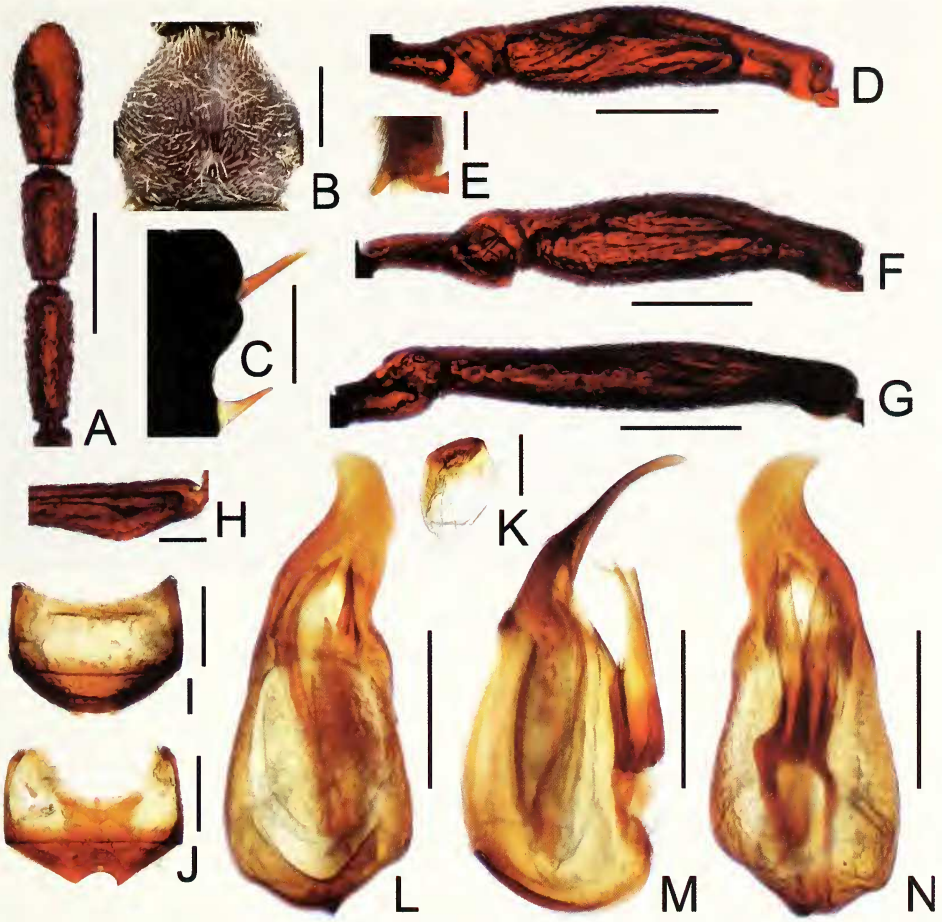

FIG. 5

Male diagnostic features of *Nomuraius vietnamicus* Hlaváč, 2003. (A) Antenna. (B) Pronotum. (C) Metaventral process, in lateral view. (D) Protrochanter and profemur. (E) Apical portion of protibia. (F) Mesotrochanter and mesofemur. (G) metatrochanter and metafemur. (H) Apical portion of metatibia. (I) Tergite VIII. (J) Sternite VIII. (K) Sternite IX. (L) Aedeagus, in dorsal view. (M) Same, in lateral view. (N) Same, in ventral view. Scales [mm]: A, B, D, F, G = 0.3; C, I, J, L, M, N = 0.2; H, K = 0.1, E = 0.05.

tufts; punctiform median- and lateral antebasal foveae small. Elytra wider than long, EL 0.81-0.82 mm, EW 1.11-1.12 mm. Long metaventral processes with pointed apices (Fig. 5C). Trochanters and femora (Figs 5D, F, G) simple; protibiae (Fig. 5E) with short apical spur; metatibiae angularly expanded medially near apices (Fig. 5H). Abdomen broad at base and narrowed apically, AL 0.81-0.87 mm, AW 1.10-1.11 mm. Tergite VIII (Fig. 5I) and sternite VIII (Fig. 5J) transverse, sternite IX as in Fig. 5K. Aedeagus length 0.56 mm, with symmetric median lobe apically bent rightwards (Figs 5L-N).

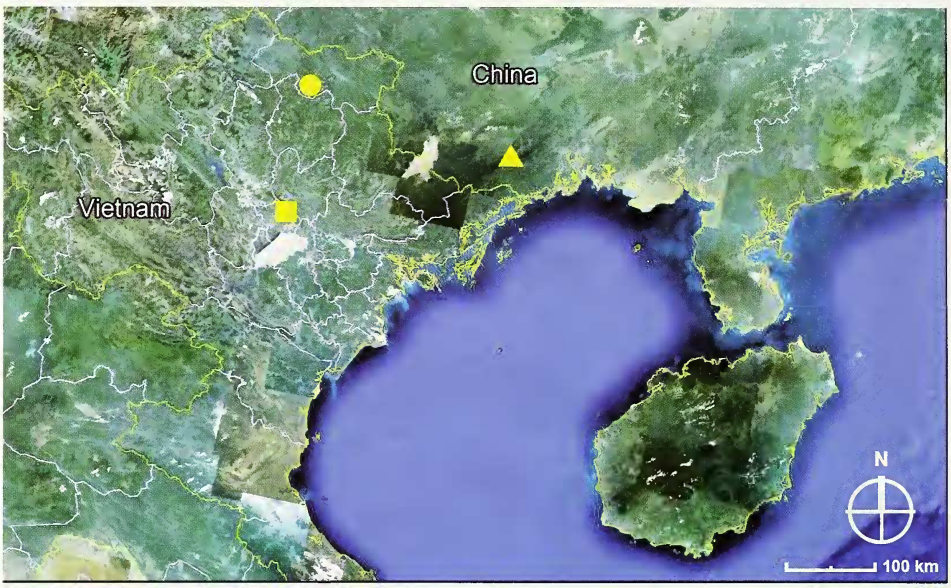

FIG. 6
Distribution of *Nomuraius* Hlaváč. (Circle) *N. piaoacus* sp. n. (Square) *N. vietnamicus* Hlaváč. (Triangle) *N. sinicus* sp. n.

Female: Measurements: BL 2.97-3.11 mm, HL 0.71-0.72 mm, HW 0.55-0.56 mm, PL 0.63-0.64 mm, PW 0.65-0.68 mm, EL 0.75-0.7 mm, EW 1.11-1.12 mm, AL 0.87-0.98 mm, AW 1.16-1.20 mm. Eyes each compose of about 22 facets. Head, pronotum, protibiae and metatibiae simple; maxillary palpomeres II shortly projecting laterally.

DISTRIBUTION AND NATURAL HISTORY: This species is known from several localities at the Tam Dao Mountain, north Vietnam. Individuals were collected from sifted leaf litter of forest floor.

COMPARATIVE NOTES: As discussed above, *N. vietnamicus* is allied to *Nomuraius sinicus*, but can be separated by the relatively shorter pronotum and elytra, the more distinctly medially-expanded apical portion of the metatibiae, the transverse male tergite VIII, and the rightwards-curved apical portion of the aedeagal median lobe.

ACKNOWLEDGEMENTS

We thank Peter Hlaváč (Praha, Czech Republic), Shûhei Nomura (NSMT, Japan) and Zhong Peng (Shanghai Normal University, China) for the collection and/or sending the material used in this paper. Shûhei Nomura is also acknowledged for the hospitality during the first author's visit (Feb. 2012) at NSMT. Comments from Giulio Cuccodoro (MHNG, Geneva) on a previous draft also improved the paper. The present study is supported by the National Natural Science Foundation of China (No. 31172134) and Shanghai Normal University (DZL125, SK. 201242).

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